

ARCHIVES OF Biochemistry and Biophysics

Volume 108 • 1964

Executive Editors

C. H. W. Hirs
B. L. Horecker

W. D. McElroy
H. S. Mason
F. F. Nord

Earl R. Stadtman
H. Theorell
W. J. Whelan

Editors

Bruce Ames
Gilbert Ashwell
Aaron Bendich
Ronald W. Estabrook
Karl Folkers
David E. Green
François Gros
D. J. Hanahan
Osamu Hayaishi
Robert L. Hill
Harvey Itano
Herman M. Kalckar

Ephraim Katchalski
Seymour Kaufman
Walter Kauzmann
Irving M. Klotz
Luis F. Leloir
C. H. Li
F. Lynen
B. G. Malmström
Clement L. Markert
A. Neuberger
L. H. Piette

Rodney R. Porter
Jesse C. Rabinowitz
M. V. Simpson
Thressa C. Stadtman
F. M. Strong
P. K. Stumpf
Andrew G. Szent-Györgyi
Kenneth V. Thimann
W. W. Umbreit
Birgit Vennesland
Gregorio Weber



ACADEMIC PRESS
New York and London

Copyright© 1964, by Academic Press Inc.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form by photostat, microfilm, or any other means, without written permission from the publishers.

Made in the United States of America

Contents of Volume 108

NUMBER 1, OCTOBER 1964

EDGAR F. CARELL AND JOSEPH S. KAHN. Synthesis of Porphyrins by Isolated Chloroplasts of <i>Euglena</i>	1
LEOPOLD R. CERECEDO, SISTER MARIAN JOSE SMITH, AND JESUS VICENTE. Tumor-Host Relationships Studied <i>In Vitro</i> : Experiments with Tissue Slice.....	7
ANTHONY W. NORMAN, JUDITH LUND, AND HECTOR F. DELUCA. Biologically Active Forms of Vitamin D ₃ in Kidney and Intestine.....	12
P. R. MAHADEVAN AND BRUCE EBERHART. The β -Glucosidase System of <i>Neurospora crassa</i> . II. Purification and Characterization of Aryl β -Glucosidase.....	22
P. R. MAHADEVAN AND BRUCE EBERHART. The β -Glucosidase System of <i>Neurospora crassa</i> . III. Further Studies on an Aryl β -Glucosidase Mutant.....	30
F. A. HOMMES. Oscillatory Reductions of Pyridine Nucleotides during Anaerobic Glycolysis in Brewers' Yeast.....	36
RYO TANAKA AND L. G. ABOOD. Phospholipid Requirement of Na ⁺ , K ⁺ -Activated Adenosine Triphosphatase from Rat Brain.....	47
ALAN C. SARTORELLI, BARBARA A. BOOTH, AND JOSEPH R. BERTINO. Folate Metabolism in Methotrexate-Sensitive and -Resistant Ehrlich Ascites Cells.....	53
I. D. DESAI, C. C. CALVERT, AND M. L. SCOTT. A Time-Sequence Study of the Relationship of Peroxidation, Lysosomal Enzymes, and Nutritional Muscular Dystrophy.....	60
GEORGE S. ASANTE AND A. LESLIE NEAL. On the Glucose-6-Phosphate Dehydrogenase of <i>Ceratocystis ulmi</i>	65
E. HARDIN STRICKLAND AND CHARLES R. GOUCHER. Effects of Ferric Nucleotides on Mitochondrial Respiration.....	72
M. G. SEVAG. Prevention of the Emergence of Antibiotic-Resistant Strains of Bacteria by Atabrine.....	85
CYRIL M. KAY, WILLIAM A. GREEN, AND KIMIO OIKAWA. Influence of Solvent Composition on Cardiac and Skeletal Myosin A as Determined by Optical Rotatory Dispersion Measurements.....	89
J. M. TREECE, R. S. SHEINSON, AND T. L. McMEEKIN. The Solubilities of β -Lactoglobulins A, B and AB.....	99
MASAKI FURUYA AND KENNETH V. THIMANN. The Biogenesis of Anthocyanins. XI. Effects of Gibberellic Acid in Two Species of <i>Spirodela</i>	109
HERMAN T. MILLER AND ROBERT E. FEENEY. Immunochemical Relationships of Proteins of Avian Egg Whites.....	117
S. BARTNICKI-GARCIA AND E. REYES. Chemistry of Spore Wall Differentiation in <i>Mucor Rouxii</i>	125
MORTON ROTHSTEIN AND HELEN MAYO. Nematode Biochemistry. IV. On Isocitrate Lyase in <i>Caenorhabditis briggsae</i>	134
MOHYI EL-DIN A. RAMADAN, FARID EL ASMAR, AND DAVID M. GREENBERG. Purification and Properties of Glutaminase and Asparaginase from a Pseudomonad. I. Purification and Physical Chemical Properties.....	143
MOHYI EL-DIN A. RAMADAN, FARID EL ASMAR, AND DAVID M. GREENBERG. Purification and Properties of Glutaminase and Asparaginase from a Pseudomonad. II. Substrate Specificity, Kinetics, Activation, and Inhibition.....	150
MARIANNE SEMMEL AND JOSEPH HUPPERT. The Interaction of Basic Dyes with Ribonucleic Acid.....	158
LETTERS TO THE EDITORS	
C. A. RYAN AND JOHN J. CLARY. Some Reactions of Chicken Chymotrypsin and Turkey Trypsin with Substrates and Naturally Occurring Protease Inhibitors.....	169
JOHN R. CANN AND WALTER B. GOAD. Precautions Required in Interpretation of Moving-Boundary and Zone Electrophoretic Patterns.....	171
Book Review.....	173
List of Forthcoming Papers.....	174

HERMAN S. GRONINGER, JR. Partial Purification and Some Properties of a Proteinase from Albacore (<i>Germo alalunga</i>) Muscle.....	175
ALBERT M. CHANDLER and RICHARD O. MOORE. Glycogen Deposition in Adipose Tissue: Variations in Levels of Glycogen-cycle Enzymes during Fasting and Refeeding.....	183
HERBERT MEGAL, ROBERT STRAUSS, ROBERT HO, and MORTON BEILER. Detection of Trypsin-Like Activity in the Plasma of Rats after Oral Administration of Trypsin.....	193
R. KOVACHEVICH and E. S. GUZMAN BARRON. Comparisons of the Phosphogluconate Oxidative Pathway in Normal and Respiration-Deficient Mutant Yeast.....	200
FRANCIS J. BEHAL, RUTH D. HAMILTON, FLORENCE B. DAWSON, and LILLIAN C. TERRELL. A Study of the Activity of Human Plasma Aminopeptidase Components on Dipeptides and Chromogenic Substrates.....	207
ROBERT SNYDER, MARTIN P. SCHULMAN, and W. W. WESTERFELD. The Incorporation of Various Substrates into Acetyl Sulfanilamide and CO ₂ by Pigeon Liver Slices.....	215
WOON KI PAIK, and SANGDUK KIM. Enzymic Synthesis of E-N-Acetyl-L-Lysine....	221
FREDERICK A. MURPHY, OLE AALUND, JOHN W. OSEBOLD, and EDWARD J. CARROLL. Gamma Globulins of Bovine Lactal Secretions.....	230
SUE NEECE and IRWIN FRIDOVICH. Boric Acid Reaction with β -Keto Acids, and Its Use in Assaying Acetoacetic Decarboxylase.....	240
CHARLOTTE R. HOLLETT. Tissue Lipases and the Postheparin Plasma Clearing Factor.....	244
ADA GOLDBERG and K. GUGGENHEIM. Effect of Antibiotics on Pancreatic Enzymes of Rats Fed Soybean Flour.....	250
J. C. SADANA and D. RITTENBERG. Iron Requirement for the Hydrogenase of <i>Desulfovibrio desulfuricans</i>	255
A. O. M. STOPPANI, A. BENNUN, and E. M. DE PAHN. Effect of 2,4-Dinitrophenol on Krebs Cycle and Phosphate Metabolism in Baker's Yeast.....	258
MARVIN M. NACHLAS, ROBERT E. PLAPINGER, and ARNOLD M. SELIGMAN. Role of Some Structural Features of Substrates on Trypsin Activity.....	266
HYUN-JAE LEE and DAVID J. HOLBROOK, JR. Accumulation of Adenine by Isolated Rat Liver Nuclei.....	275
DAVID F. JOHNSON, JAMES A. WATERS, and RAYMOND D. BENNETT. Cholesterol Transformations in <i>Solanum tuberosum</i>	282
W. V. LAVATE and RONALD BENTLEY. Distribution of Normal Isoprenologs of Coenzyme Q and Dihydro Coenzyme Q ₁₀ in Various Molds.....	287
MILTON WINITZ and NOBUO IZUMIYA. Studies on Polypeptide Antibiotics. I. 2,5-Diketopiperazines as Models of Cyclic Polypeptide Antibiotics.....	292
YU-TEH LI and M. R. SHETLAR. Galactosyl Transfer Reactions Catalyzed by Pneumococcal α -Galactosidase.....	301
W. H. BOWMAN, I. S. PALMER, C. O. CLAGETT, and M. F. MALLETT. Effects of p-Fluorophenylalanine on Lactose-Induced β -Galactosidase Synthesis in Resting-Cell Suspensions of <i>Escherichia coli</i>	314
D. R. HARKNESS, L. TSAI and E. R. STADTMAN. Bacterial Degradation of Riboflavin. V. Stoichiometry of Riboflavin Degradation to Oxamide and Other Products, Oxidation of C ¹⁴ -Labeled Intermediates and Isolation of the Pseudomonad Effecting These Transformations.....	323
G. JOMMI, P. MANITTO, and M. A. SILANOS. Metabolism of Diazepam in Rabbits....	334
A. ANASTASI, V. ERSPAMER, and J. M. CEI. Isolation and Amino Acid Sequence of Physalaemin, the Main Active Polypeptide of the Skin of <i>Physalaemus fuscumaculatus</i>	341
JAN KOCOUREK, MARIE TICHÁ, and JOSEF KOŠTŘÍ. Formation of Ribulose in Plants Fed L-Arabitol.....	349
W. E. NORRIS, JR. Reversal of Ethionine-Induced Inhibition of Elongation of <i>Avena</i> Coleoptiles by Adenosine Triphosphate.....	352

LETTERS TO THE EDITORS

F. C. MAYER, RICHARD DAM, AND JOHN H. PAZUR. Occurrence of Sialic Acids in Plant Seeds.....	356
MASARU TAKESHITA AND HAJIME IWAI. Conversion of Nucleoside to Sedoheptulose Monophosphate by Mouse Liver Injured with CCl ₄	357
R. A. HEACOCK AND O. HUTZINGER. 6-Sulphatoxyskatole.....	358
PETER TRIP, C. D. NELSON, AND G. KROTKOV. Primary Products of Photosynthesis in Leaves of Celery.....	359
ALCIRA MORENO AND CARLOS E. CARDINI. Ethyl β -D-Fructofuranoside from Wheat Germ.....	361
G. PADMANABAN AND P. S. SARMA. A New Iron-Binding Compound from Cobalt-Toxic Cultures of <i>Neurospora Crassa</i>	362
JEANIE M. CAFFERY, LEONA WHICHARD, AND J. LOGAN IRVIN. Effect of Histones on the Induction of Two Liver Enzymes by Hydrocortisone.....	364
Book Reviews.....	366
List of Forthcoming Papers.....	370
Books Received for Review.....	371
Erratum.....	374

NUMBER 3, DECEMBER 1964

JAMES H. BAXTER. Differences in Serum Albumins Reflected in Absorption Spectra of a Bound Dye.....	375
R. S. ROSENFELD. The Isolation of Coprostanol from Sterol Esters of Human Feces.....	384
JEAN C. LANDGRAF, H. D. JACKSON, H. E. PARKER, AND W. J. TIETZ. Uptake of Calcium-45 by Rat Diaphragm <i>in Vitro</i>	386
DONALD R. TAVES AND W. F. NEUMAN. Factors Controlling Calcification <i>in Vitro</i> ; Fluoride and Magnesium.....	390
ROBERT GUTHRIE AND WAN CHING LU. Antagonism between Purines in Purine-Requiring <i>Bacillus subtilis</i> Mutants.....	398
ARNOLD L. DEMAIN. Antagonism by Purines and Derivatives in the Nutrition of a <i>Bacillus subtilis</i> Mutant.....	403
F. J. REITHEL, J. E. ROBBINS, AND G. GORIN. A Structural Subunit Molecular Weight of Urease.....	409
GEORGE LUST AND LOUISE J. DANIEL. Vitamin B ₁₂ and the Synthesis of the Methyl Groups of Choline in <i>Ochromonas malhamensis</i>	414
E. STEVENSON AND G. R. WYATT. Glycogen Phosphorylase and Its Activation in Silkworm Fat Body.....	420
W. T. FAITH, JR., N. A. GIORGIO, AND M. F. MALLETT. Mechanism of Glucose Inhibition of β -Galactosidase Biosynthesis in Resting Cultures of <i>Escherichia coli</i>	430
NICOLE SIGAL, JEANNE CATTANEO, AND IRWIN H. SEGAL. Glycogen Accumulation by Wild-Type and Uridine Diphosphate Glucose Phosphorylase-Negative Strains of <i>Escherichia coli</i>	440
EDWIN T. NISHIMURA, STANLEY N. CARSON, AND THOMAS Y. KOBARA. Isozymes of Human and Rat Catalases.....	452
KATHARINE W. LEE AND ALLAN H. ROUSH. Allantoinase Assays and Their Application to Yeast and Soybean Allantoinases.....	460
M. MARCHETTI AND P. PUDDU. Metabolic Aspects of "Orotic Acid Fatty Liver". Relationships between Biotin and Fatty Liver.....	468
LUIGI MESSINEO. Immunological Specificity of Glycine-Extracted Deoxyribonucleoproteins.....	471
THOMAS E. RAGLAND AND DAVID P. HACKETT. Compartmentation of Nicotinamide Dinucleotide Dehydrogenases and Transhydrogenases in Nonphotosynthetic Plant Tissues.....	479
Y. VICTOR WU AND ROBERT J. DIMLER. Hydrogen-Ion Equilibria of Wheat Gluten in Guanidine-Hydrochloride Solutions.....	490
AGNES BODANSZKY AND WALTER KAUFMANN. Carboxyl-Carboxyl Hydrogen Bonds in the Stabilization of the Poly-L-Glutamic Acid Helix.....	497
F. A. HOMMES. Oscillation Times of the Oscillatory Reduction of Pyridine Nucleotides during Anaerobic Glycolysis in Brewer's Yeast.....	500

F. C. G. HOSKIN. Stimulation of Respiration and Inhibition of Glycolysis in Lobster Axons by Menadione and Some Related Naphthoquinones.....	506
F. LEE RODKEY. Binding of Bromocresol Green by Human Serum Albumin.....	510
J. S. BAUMSTARK, R. J. LAFFIN, AND W. A. BARDWIL. A Preparative Method for the Separation of 7S Gamma Globulin from Human Serum.....	514
YU-TEH LI AND M. R. SHETLER. Occurrence of α -Galactosidase in Higher Fungi: Isolation of α -Galactosidase from <i>Calvatia cyathiformis</i>	523
JACK A. KLAPPER, JR. AND JOHN R. CANN. Inhibition of Peptic Digestion of Serum Albumin by Fatty Acids.....	531
ROBERT L. COLLIN AND BERNARD PULLMAN. Some Electronic Aspects of the Mechanism of Thiamine Action.....	535
L. B. NANNINGA AND M. M. GUEST. On the Interaction of Fibrinolysin (Plasmin) with the Inhibitors Antifibrinolysin and Soybean Trypsin Inhibitor.....	542
DONALD R. GRANT AND JOHN M. LAWRENCE. Effects of Sodium Dodecyl Sulfate and Other Dissociating Reagents on the Globulins of Peas.....	552
G. JOMMI, P. MANITTO, AND M. A. SILANOS. The Metabolism of Diazepam in Rabbits.....	562
ERALDO ANTONINI, JEFFERIES WYMAN, MAURIZIO BRUNORI, CLARA FRONTICELLI, ENRICO BUCCI, MORRIS REICHLIN AND ALESSANDRO ROSSI FANELLI. The Oxygen Bohr Effect of Human Fetal Hemoglobin.....	569

LETTERS TO THE EDITORS

T. MINAMIKAWA AND I. URITANI. Phenylalanine Deaminase and Tyrosine Deaminase in Sliced or Black Rot-Infected Sweet Potato Roots.....	573
L. C. COSTELLO AND L. L. DARAGO. Parathyroid Extract Inhibition of Isocitrate Oxidation by Kidney Mitochondria.....	574
MILTON WINITZ, JACK GRAFF AND DANIEL A. SEEDMAN. Effect of Dietary Carbohydrate on Serum Cholesterol Levels.....	576
List of Forthcoming Papers.....	580
Author Index.....	581
Subject Index.....	584